REMARKS

Claims 6-10, 26, 28, 32, 36, 38, 42, 44 and 51-55 are currently pending. Claims 6-10, 28, 32, 36, 42 and 51-55 have been amended to more particularly point out and distinctly claim the invention. The amendments are supported in the specification and the original claims as filed. In particular, in Claims 7, 8, 52, 53 and 55, the phrase "bacterial or plant cells" has support in the specification at page 11, lines 7-15; page 18, lines 10-20; page 23-25 and Figures 6 and 7. In Claims 9, 10, 36 and 54, the phrase "low temperature, drought or salinity" has support in the specification at pages 3, lines 25-30; pages 6, lines 5-10 and Figures 5 and 10. None of the amendments introduces new matter.

1. The Original Claims Particularly Point Out and Distinctly Claim the Subject Matter of the Present Invention

Claims 27, 31 and 42 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly out and distinctly claim the subject matter which applicant regards as the invention. Applicant submits that this rejection has been obviated because independent Claims 27 and 31 are canceled and Claim 42 has been amended to avoid the Examiner's objections. In particular, Applicant has accepted the Examiner's suggestion and amended Claim 42 to read "transforming a plant with SEQ. ID. NO: 2 wherein a MAPK5 protein is expressed in the plant".

2. The Claimed Invention is Enabled Under 35 U.S.C. § 112

Claims 7-8, 26-27, 31, 35-36, 38, 42, 44 and 52-53 have been rejected under 35 U.S.C. § 112, first paragraph, as failing to enable one skilled in the art to make or

use the invention as claimed. The Applicant respectfully submits that these rejections are in error and should be withdrawn for the reasons detailed below.

The Examiner acknowledges that the specification is enabling for a transgenic plant with increased stress tolerance and a method of producing the transgenic plant comprising over-expression of a rice nucleic acid sequence encoding the polypeptide of SEQ. ID. NO:2 (OsMAPK5). However, the Examiner maintains that the specification does not provide guidance to any MAPK5 and MAPK5 orthologs and any host cell (other than bacterial or pant cell). Applicant has amended independent Claims 7, 8, 52 and 53 and dependent claims thereof to recite wherein the host cell is bacterial or plant cell. Independent Claims 42 and dependent claims thereof were amended to recite the nucleic acid sequence encoding the polypeptide of SEQ. ID. NO:2. Claims 27, 31 and 35 are canceled.

Applicant submits that the specification provides guidance as to how to use the present invention. The specification describes a method for enhancing tolerance to abiotic stress in a plant by transforming a plant with a MAPK5 nucleic acid sequence and subjecting the plant to abiotic stress conditions of low temperature, drought or salinity. (see specification at pages 3, lines 25-30; pages 6, lines 5-10 and Figures 5 and 10). Accordingly, Applicant submits that he rejections have been obviated and respectfully request that the rejection under 35 U.S.C. §112 be withdrawn.

3. The Claimed Invention Complies with the Written Description Under 35 U.S.C. § 112

The Examiner rejected Claims 27, 31, 35, 36, 38, 42 and 44 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Specifically, the Examiner contends that the specification does not have adequate

written description for the genus of MAPK5 orthologs derived from the *Graminaceae* family. The Examiner argues that the claims encompass a large number of undisclosed structures and applicants have failed to correlate the structures of their broadly claimed genus tot the function of abiotic stress tolerance in a plant. Applicant submits that independent Claim 42 and dependent claims thereof were amended to recite the nucleic acid sequence encoding the polypeptide of SEQ. ID. NO:2. Claims 27, 31 and 35 are canceled

Accordingly, Applicant respectfully submits that the Examiner's rejection of Claims 1-8 under 35 U.S.C. § 112, have been overcome and therefore respectfully request that the rejection be withdrawn.

4. <u>The Claimed Invention is Patentable over Wen et al.</u>

Claims 6-10 and 51-55 are rejected under 35 U.S.C. § 102, as anticipated by Wen et al. (*Plant Physiol.*, 2002; 129:1880-1891).

In response, Applicant submits the Declaration of Yinong Yang, Ph.D. dated September 14, 2007, accompanying the current papers. Applicant submits that the declaration establishes invention of the subject matter of rejected claims prior to the effective date of the above cited references. Specifically, the experiments and data described in the declaration establish that the over-expression of MAPK5 and suppression led to abiotic and biotic stress tolerance in rice plants. (*see* Yang Declaration at ¶¶12-14). The Declaration states that Dr. Yang determined the role of rice MAPK5 in abiotic and biotic stress conditions on or before November 2000. (*see* Yang at ¶11).

Accordingly, Applicant respectfully submits that the Examiner's rejection of Claims 6-10 and 51-55 under 35 U.S.C. § 102, have been overcome and therefore respectfully request that the rejection be withdrawn.

5. **The Claimed Invention is Not Obvious Under 35 U.S.C. § 103**

Claims 26-28, 31-32, 35, 36, 38, 42 and 55 are rejected under 35 U.S.C. § 103, as being unpatentable over Wen et al. (*Plant Physiol.*, 2002; 129:1880-1891) in view of Valvekens et al. (*PNAS*, 1988; 85:553-5540). Applicant respectfully submits that these rejections should be withdrawn for the reasons detailed.

For the reasons stated under the §102 rejection above, reference Wen et al (*Plant Physiol.*, 2002; 129:1880-1891) has been obviated and should be withdrawn.

Applicant submits that there is no mention or suggestion in the Valvekens reference of an expression vector or genetically engineered host cell or transgenic plant comprising MAPK5 operatively associated with a regulatory nucleotide sequence containing transcriptional and translational regulatory information that control expression of the nucleotide sequence in a host cell wherein OSMAPK5a is expressed under abiotic stress conditions. Likewise, Valvekens does not teach or suggest a method for increasing abiotic stress in a plant by evaluation the increase or decrease in the MAPK5 activity under abiotic conditions.

The Examiner states that Valvekens et al teaches a method of transformation of plant cells with Agrobacterium and regeneration of transgenic plants expressing a heterologous protein of interest. Applicant respectfully emphasizes that there is no recognition or suggestion in the Valvekens reference of the present invention which takes advantage of the fact that expression of MAPK5 under abiotic conditions enhances abiotic tolerance in plants. Further, Valvekens does not teach that expression of MAPK5 is up-regulated during abiotic stress treatment. Rather, for the first time, the present invention provides that MAPK5 plays a role in abiotic and biotic tolerance in plants.

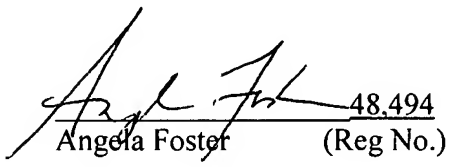
Thus, Applicant respectfully submits that the claimed invention is not obvious in view of the cited references.

CONCLUSION

For all the reasons above, Applicant respectfully submits that all of the rejections based on 35 U.S.C. §112, §102 and §103 are in error or have been avoided and should be withdrawn. Applicant further submits that the present Claims 6-10, 26, 28, 32, 36, 38, 42, 44 and 51-55 are in form for allowance and respectfully requests action to that end.

Respectfully submitted,

Date: September 15, 2007



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